



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/518,945

07/13/2005

Yoshihiro Ito

36856.1310

4943

54066

7590

02/12/2008

MURATA MANUFACTURING COMPANY, LTD.

C/O KEATING & BENNETT, LLP

8180 GREENSBORO DRIVE

SUITE 850

MCLEAN, VA 22102

EXAMINER

NGUYEN, THANH T

ART UNIT

PAPER NUMBER

2813

NOTIFICATION DATE

DELIVERY MODE

02/12/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

JKEATING@KBIPLAW.COM

uspto@kbiplaw.com

Office Action Summary	Application No. 10/518,945	Applicant(s) ITO ET AL.	
	Examiner THANH T. NGUYEN	Art Unit 2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 9/11/07.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims 10-28 have been considered but are moot in view of the new ground(s) of rejection.

Specification

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 10-28 rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al. (U.S. Patent No. 6,863,943) in view of Tanabe et al (6,735,230 B1).

Regarding claim 10, Wang et al discloses a semiconductor device comprising:

a single crystal substrate primarily including zinc oxide and having a zinc-polar surface and an oxygen-polar surface (see column 5, lines 66-67 thru column 6, lines 1-26); and at least one layer of thin film primarily including zinc oxide disposed on the zinc-polar surface (see column 5, lines 23-30, lines 66-67 thru column 6, lines 1-26).

Regarding claim 11, Wang et al discloses wherein the at least one layer of thin film has zinc-polarity (column 6, lines 19-26).

Regarding claim 20, Wang et al discloses a method for manufacturing a semiconductor device, comprising the steps of:

determining whether a surface of a single crystal substrate primarily including zinc oxide is a zinc-polar surface or an oxygen-polar surface(see column 5, lines 66-67 thru column 6, lines 1-26);

an forming at least one layer of thin film primarily including zinc oxide on the zinc-polar surface(see column 5, lines 23-30, lines 66-67 thru column 6, lines 1-26).

Regarding claim 21, Wang et al discloses wherein the thin film has zinc-polarity (column 6, lines 19-26).

It would be obvious to one ordinary skill in the art to form a plurality of zinc oxide layers with the same process as using in the first oxide layer since it is well-known in the art to repeat the same process for multiple effect. See *St. Regis paper, Co. V. Bemis Co. Inc.* 193 USPQ 8, 11 (7th circuit 1977).

Wang et al discloses all above claimed subject matter except wherein the at least one layer of thin film includes a multilayer film and the multilayer film defines a light-emitting layer (claims 12 and 25), wherein the at least one layer of thin film includes a multilayer film and the multilayer film defines a switching portion (claims 13 and 26), wherein the multilayer film includes an n-type contact layer, an n-type clad layer, an active layer, a p-type clad layer and a p-type contact layer (claims 14 and 27), further comprising a transparent electrode disposed on the multilayer film (claim 15), wherein the transparent electrode is made of Indium Tin Oxide (claim 16), wherein the multilayer film includes an n-type contact layer, an n-type clad layer, an n-type light guide layer, an active layer, a p-type light guide layer, a p-type clad layer, a current limiting layer, and a p-type contact layer (claims 17 and 28), further comprising a p-side electrode disposed on the multilayer film (claim 18), wherein the p-side electrode includes a Ni film, an Al film, and a Au film (claim 19), providing a sputtering apparatus provided with a plasma generation chamber and a separate film formation chamber; and performing sputtering treatment using the sputtering apparatus so as to form the thin film (claim 22), wherein the sputtering treatment is performed by a method selected from the group consisting of an electron cyclotron resonance plasma sputtering method, an inductively coupled plasma sputtering method, a sputtering method, an ion beam sputtering method, method helicon wave excited plasma and a cluster beam sputtering (claim 23), wherein the thin film is formed by a method selected from

Art Unit: 2813

the group consisting of a molecular-beam epitaxy method, a metal organic chemical vapor deposition method, a laser molecular-beam epitaxy method, and a laser abrasion method (claim 24).

Tanabe et al discloses wherein the at least one layer of thin film includes a multilayer film and the multilayer film defines a light-emitting layer (Figure 1, reference 11), wherein the at least one layer of thin film includes a multilayer film and the multilayer film defines a switching portion (Figure 1, reference 1,1), wherein the multilayer film includes an n-type contact layer (Figure 1, reference 3), an n-type clad layer (Figure 1, reference 4), an active layer (Figure 1, reference 5), a p-type clad layer (Figure 1, reference 6) and a p-type contact layer (Figure 1, reference 7), further comprising a transparent electrode disposed on the multilayer film (column 15, lines 26-46), wherein the transparent electrode is made of Indium Tin Oxide (column 15, lines 26-46), wherein the multilayer film includes an n-type contact layer (Figure 1, reference 3), an n-type clad layer (Figure 1, reference 4), an n-type light guide layer (Figure 1, reference 14), an active layer (Figure 1, reference 5), a p-type light guide layer (Figure 1, reference 16), a p-type clad layer (Figure 1, reference 6), a current limiting layer (Figure 16, reference 17), and a p-type contact layer (Figure 1, reference 7), further comprising a p-side electrode disposed on the multilayer film (Figure 1, reference 10), wherein the p-side electrode includes a Ni film, an Al film, and a Au film (column 13, lines 20-30), providing a sputtering apparatus provided with a plasma generation chamber and a separate film formation chamber; and performing sputtering treatment using the sputtering apparatus so as to form the thin film (column 29, lines 7-25), wherein the sputtering treatment is performed by a method selected from the group consisting of an electron cyclotron resonance plasma sputtering method, an inductively coupled plasma

Art Unit: 2813

sputtering method, a sputtering method, an ion beam sputtering method, method helicon wave excited plasma and a cluster beam sputtering (column 29, lines 7-25), wherein the thin film is formed by a method selected from the group consisting of a molecular-beam epitaxy method, a metal organic chemical vapor deposition method, a laser molecular-beam epitaxy method, and a laser abrasion method (column 33, lines 13-15).

Therefore, it would have been obvious to a person of an ordinary skill in the requisite art at the time the invention was made would modify Wang et al with the teachings of Tanabe et al, for the purpose of making a light emitting device (LED).

Response to Arguments

Applicant's arguments with respect to claims 10-28 have been considered but are moot in view of the new ground(s) of rejection.

Applicant contends that Wang et al. does not teach a zinc oxide disposed on the zinc polar surface. In response to applicant that Wang et al. clearly teaches a zinc oxide disposed on the zinc polar surface (see col. 5, lines 23-30). It would be obvious to one ordinary skill in the art to form a plurality of zinc oxide layers with the same process as using in the first oxide layer since it is well-known in the art to repeat the same process for multiple effects. See St. Regis paper, Co. V. Bemis Co. Inc. 193 USPQ 8, 11 (7th circuit 1977).

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh Nguyen whose telephone number is (571) 272-1695, or by Email via address Thanh.Nguyen@uspto.gov. The examiner can normally be reached on Monday-Thursday from 6:00AM to 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, can be reached on (571) 272-1702. The fax phone number for this Group is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pairedirect.uspto.gov>. Should you have questions on access to thy Private PAIR system, contact the Electronic Business center (EBC) at 866-217-9197 (toll-free).

/Thanh T. Nguyen/
Thanh Nguyen
Primary Examiner, Art Unit 2813

TTN

<div>Application Number</div> <div></div>	Application/Control No.	Applicant(s)/Patent under Reexamination	
	10/518,945	ITO ET AL.	
	Examiner	Art Unit	
	THANH T. NGUYEN	2813	